

REMARKS

The present application was filed on July 10, 2003 with claims 1 through 21. Claims 2, 6, 10-13, 16 and 18 have been previously canceled without prejudice. Claims 10-13 had been withdrawn from consideration in response to a restriction requirement. Therefore, claims 1, 3-5, 7-9, 14, 15, 17 and 19-21 are presently pending in the above-identified patent application. Applicant herein proposes to amend claim 21. Support for the amendments can be found, for example, on page 11, line 5 through page 12, line 17. No new matter is being introduced.

In the Office Action, the Examiner rejected claim 21 under 35 U.S.C. §112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention, and rejected claims 1, 3-5, 7-9, 14-15, 17, and 19-21 under 35 U.S.C. §103(a) as allegedly being unpatentable over Eisenberg et al. (Nature, volume 299, 1982, pages 371-274) (hereinafter “Eisenberg”) in view of Silverman (PNA; April 24, 2001; volume 98, pages 4996-5001) (hereinafter “Silverman”) in view of Platt et al. (US Patent 5,784,294; issued 21 July 1998; filed 9 June 1995) (hereinafter “Platt”).

The comments of the Examiner in forming the rejections are acknowledged and have been carefully considered.

Section 112, Second Paragraph, Rejection

Also, the Examiner rejected claim 21 under 35 U.S.C. §112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Beginning on page 3, the Office
5 Action stated that

it is unclear whether these claim elements are step-plus-function limitations that invoke U.S.C. 112, sixth paragraph, because these elements do not us the required language involving “**a step for...**” (Emphasis original)

10 Applicant herein amends claim 21 to include “a step for” language. Support for the amendment can be found, for example, on page 11, line 5 through page 12, line 17. Consequently, Applicant submits that, as amended, claim 21 overcomes the rejection. Thus, Applicant respectfully requests reconsideration and withdrawal of the rejection of claim 21 under 35 U.S.C. §112, second paragraph.

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Section 103(a) Rejection

The Examiner also rejected claims 1, 3-5, 7-9, 14-15, 17, and 19-21 under 35 U.S.C. §103(a) as allegedly being unpatentable over Eisenberg in view of Silverman in view of Platt. Applicant initially notes that a proper *prima facie* case of obviousness 20 requires that the cited references combined must “teach or suggest all the claim limitations,” and that there be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the references or to modify the reference teachings. See MPEP §706.02(j). However, Applicant respectfully submits (as detailed below) that the cited combination 25 of references does not teach or suggest all of the limitations of the claims.

Applicant respectfully re-submits that the cited references do not teach or suggest the aspects of enhancing correlation between residue centroid magnitude and residue solvent accessibility, as well as the subsequent steps that involve using the enhanced correlation. Page 7 of the *current* Office Action states that

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Figure 2 of Eisenberg et al. also demonstrates an enhanced correlation between residue magnitude and residue solvent accessibility, wherein the correlation between residue moment magnitude and residue solvent accessibility is enhanced using a distance metric. Specifically, the ordinate axis of Figure 2 of Eisenberg et al. demonstrates a residue moment magnitude

which is then correlated to solvent accessibility (i.e. “Globular,” “Surface,” and “Membrane,”) within the plot of Figure 2 of Eisenberg et al.

Applicant respectfully disagrees with the cited assessment of Figure 2 of Eisenberg for multiple reasons. First, Applicant asserts that the abscissa of Figure 2 of Eisenberg does not represent solvent accessibility, but rather “the mean hydrophobicity of each segment.” (See, page 374, Eisenberg) Pages 11-12 of the Office Action, however, states that such an “argument is not persuasive because... hydrophobicity does pertain to solvent accessibility,” and notes that “there is a relation between the values of the abscissa of Figure 2 and the solvent accessibility....” (Emphasis added) In response, Applicant asserts that even if the two concepts do *pertain* to one another and a *relation* exists between the two values, the Examiner’s own logic dictates that there are two separate elements at play. The claim limitation in question is enhancing correlation between residue centroid magnitude and residue solvent accessibility -- not mean hydrophobicity. Eisenberg does not teach the limitation as claimed. To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

Further, Applicant submits that these explanations are conclusory statements of the sort rejected by both the Federal Circuit and the U.S. Supreme Court. *See KSR v. Teleflex*, 127 S.Ct. 1727, 1741, 82 USPQ2d 1385, 1396 (U.S., Apr. 30, 2007), quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.”).

Also, Applicant re-acknowledges that in previous Office Actions, the Examiner conceded that “Eisenberg et al. does not show correlation enhancement between residue centroid magnitude and solvent accessibility....” (See, for example, page 8 of the August 5, 2008 Office Action) In response, page 11 of the current Office Action states that

[w]hile applicant insists that previous Office actions [] did not indicate this limitation, applicant is encouraged to refer to the most recent Office action mailed on 31 March 2009 and the corresponding Advisory Action mailed on 10 June 2009 to further understand this point. The instant Office action further clarifies the teaching.... (Emphasis added)

Applicant, as noted above, respectfully disagrees with the clarification that Eisenberg now *does* “teach[] the required correlation between magnitude and solvent accessibility,” and submits that Figure 2 of the Eisenberg reference does not show or suggest the claimed aspect of enhancing correlation between residue centroid magnitude 5 and solvent accessibility to define the global linear hydrophobic moment.

Additionally, Applicant re-asserts that the cited references do not teach or suggest the claimed aspect of wherein each residue centroid having a same fractional distance to a 10 surface of the tertiary protein structure as one or more additional residue centroids contributes an equivalent magnitude to the global linear hydrophobic moment as the one or more additional residue centroids by mapping each residue at a same distance from a center of the protein structure, as included in amended claims 1, 14 and 21.

Page 9 of the Office Action states that

Figure 3 of Silverman is interpreted to teach fractional distances between the center point of the plot and surface of the protein (i.e. the outermost ellipse). Specifically, Figure 3 is a cross-section of the alpha-helix of 1AKZ, with the outermost ellipse being interpreted as the surface of the protein.... As there is no single pair of centroids with the SAME fractional distance to the surface of the protein there are no pairs of centroids that contribute an equivalent magnitude to the global linear hydrophobic moment by mapping each residue at a same distance from the center of the protein structure. (Emphasis added)

Applicant respectfully disagrees with this interpretation of Figure 3 of Silverman, 25 as there is no explicit teaching measuring fractional distances or their contribution to the global linear hydrophobic moment. Further, Applicant again submits that these explanations are conclusory statements of the sort rejected by both the Federal Circuit and the U.S. Supreme Court. *See KSR v. Teleflex*, 127 S.Ct. 1727, 1741, 82 USPQ2d 1385, 1396 (U.S., Apr. 30, 2007), quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) 30 (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.”).

Further, with respect to independent claim 1 and claims dependent therefrom, Applicant re-submits that the cited references do not teach or suggest the aspect of a tertiary protein structure analyzer embodied on a tangible computer-readable recordable storage medium executing on a hardware processor to perform the denoted steps. Page 9
5 of the Office Action states that

Figure 1 of Platt et al. illustrates computerized limitations that are interpreted to be computer system and a structure analyzer for the purpose of identifying molecular moments....

10 Applicant respectfully disagrees with the cited assessment of Platt, and submits that Platt does not teach or suggest a tertiary protein structure analyzer executing on a computer configured to carry out the steps denoted in independent claim 1. Beginning in column 4, line 57, Platt states that

15 [t]he computer system 100 may include a work station [] that performs the relevant calculations discussed below, e.g., calculations involving the structure and electronic charge of molecules.... The computer system 100 also includes a memory 108 that stores the software applications that are executed on a processor 110 to perform the molecular model building, molecular simulations, and required statistical analyses as discussed below.

20 Applicant asserts that the system described in Platt includes distinctly capabilities than those in the present claim limitations. For example, page 11, lines 14-24 of the specification states that

25 the methods and apparatus discussed herein may be distributed as an article of manufacture that itself comprises a computer-readable medium having computer-readable code means embodied thereon. The computer-readable program code means is operable... to carry out all or some of the steps to perform the methods or create the apparatus discussed herein. The computer-readable code is configured to calculate a centroid of residue centroids; use the centroid of residue centroids as a spatial origin of a global linear hydrophobic moment; enhance correlation between residue centroid magnitude and residue solvent accessibility; and define the global linear hydrophobic moment, wherein each of the residue centroids contributes a magnitude and direction to the global linear hydrophobic moment.

35 Additionally, Applicants submit that the explanations made in connection with Platt are conclusory statements of the sort rejected by both the Federal Circuit and the U.S. Supreme Court. *See KSR v. Teleflex*, 127 S.Ct. 1727, 1741, 82 USPQ2d 1385, 1396

(U.S., Apr. 30, 2007), quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.”).

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Applicant respectfully submits that the combination of references does not teach or suggest the limitations in question, and therefore, that the §103 rejection is improper. Also, Applicant further submits that by virtue of their dependence on independent claims 1 and 14, claims 3-5, 7-9 and 15, 17-20, respectively recite patentable subject matter in their own right. If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Therefore, Applicant respectfully requests withdrawal of the §103(a) rejection from claims 1, 3-5, 7-9, 14, 15, 17 and 19-21.

15 All of the pending claims, i.e., claims 1, 3-5, 7-9, 14, 15, 17 and 19-21, are in condition for allowance and such favorable action is earnestly solicited.

If any outstanding issues remain, or if the Examiner has any further suggestions for expediting allowance of this application, the Examiner is invited to contact the undersigned at the telephone number indicated below.

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The Examiner's attention to this matter is appreciated.

Respectfully submitted,



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